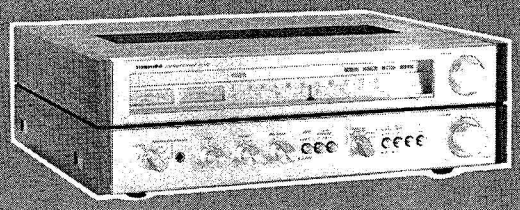
SERVICE DATA
FILE NO. 170-022

TOSHIBA

AM/FM STEREO RECEIVER

SA-420



SPECIFICATIONS

■ FM TUNER SECTION

Receiving Frequency : 88 ~108 MHz
Sensitivity (IHF) : 1.9 μV
Harmonic Distortion :
MONO Less than 0.2% (400Hz100%)
STEREO Less than 0.4% (400 Hz100%)
Signal-to-Noise Ratio : 70dB
Frequency Response : 20Hz ~ 15KHz +0.2 –2dB
Image Rejection : 60 dB (108MHz)
IF Rejection : 90 dB (88MHz)
Capture Ratio (IHF) : 1.0 dB
AM Suppression : 50 dB
Stereo Separation : More than 40 dB (1KHz)

■ AM TUNER SECTION

Receiving Frequency : 525 ~ 1605 KHz
Sensitivity INF : 15 μV (ext. Antenna)
200 μV (Ferrite Antenna)
Image Rejection : 40 dB (1400 KHz)
IF Rejection : 70 dB (600 KHz)
Signal-to-Noise Ratio : 50 dB

■ AUDIO SECTION

Power output
25 watts per channel, min. PMS, at 4 ohms
from 20 Hz to 20 KHz
20 watts per channel, min. RMS, at 8 ohms
from 20 Hz to 20 KHz
15 watts per channel, min. RMS at 16 ohms
from 20 Hz to 20 KHz.
With no more than 0.4% total harmonic distortion
Continuous Power Output
Both channels driven (1 KHz)
25W + 25W (8 ohms)
30W + 30W (4 ohms)
Harmonic Distortion
20Hz to 20KHz continuous Power Output: 0.4% or less
1W + 1W, Power Output : 0.08% or less
Intermodulation Distortion
Continuous Power Output : 0.4% or less
1W + 1W, Power Output : 0.08% or less
Frequency Responce:
PHONO (RIAA equalization) : 30Hz~15KHz±1dB
AUX, TAPE 20Hz~30KHz±1dB
Input Sensitivity (Impedance)
PHONO : 2.5mV (47 Kohms)
AUX : 150 mV (50 Kohms)
TAPE : 150 mV(50 Kohms)
Recording Ouput
TAPE REC. : 150 mV
TAPE DIN. : 30 mV (80 K ohms)
Signal-to-Noise Ratio
IHF Short-circuit, A NETWORK)
PHONO 70 dB
AUX 90 dB
Residual Noise 1 mV or less
Speaker Impedance A, B 4~16 ohms
A + B 8 ~ 16 ohms
Headphone Impedance 4 ~ 16 ohms
Tone Control
Bass (100 Hz) +8, –8dB
Treble (10 KHz) +8, –8dB
Loudness (Volume-40dB) +10dB (100Hz), +5dB (10KHz)
Damping Factor (1KHz, 8 ohms) more than 30

■ MISCELLANEOUS

Power Voltage AC 120V 60Hz (USA, CANADA)
AC 220/240V 50Hz (EUROPE)
Power Consumption: 130W (U.S.A., CANADA)
max. output x 1/3, sine wave.
180W (EUROPE)
white noise, rating output, filter
Dimentions 500 (W) x 158 (H) x 435 (D) mm
Weight : 11.5 kg (25–6/16 lbs)

TABLE OF CONTENTS

OPERATING CONTROLS 3
- FRONT VIEW 3
- REAR VIEW 3

DISASSEMBLY INSTRUCTIONS 4
- BOTTOM BOARD REMOVAL 4
- PRINTED CIRCUIT BOARD REMOVAL 4
- CABINET REMOVAL 5

DIAL CORD RESTRINGING INSTRUCTIONS 5

CIRCUIT ADJUSTMENTS 6
- AM ADJUSTMENT 6
- FM ADJUSTMENT 7
- FM-MPX ADJUSTMENT 8
- POWER TRANSISTOR IDLING CURRENT ADJUSTMENT 8
- NOTICE FOR VOLTAGE SELECTOR SWITCH SETTING 8

BLOCK DIAGRAM 9

SEMICONDUCTOR BASE DIAGRAMS 9

ELECTRICAL PARTS LOCATIONS 10
- BOTTOM VIEW OF POWER SUPPLY P.C. BOARD 10
- BOTTOM VIEW OF TUNER P.C. BOARD 11
- BOTTOM VIEW OF CONTROL P.C. BOARD 12
- BOTTOM VIEW OF POWER AMP. P.C. BOARD 12
- BOTTOM VIEW OF EQUALIZER P.C. BOARD 12

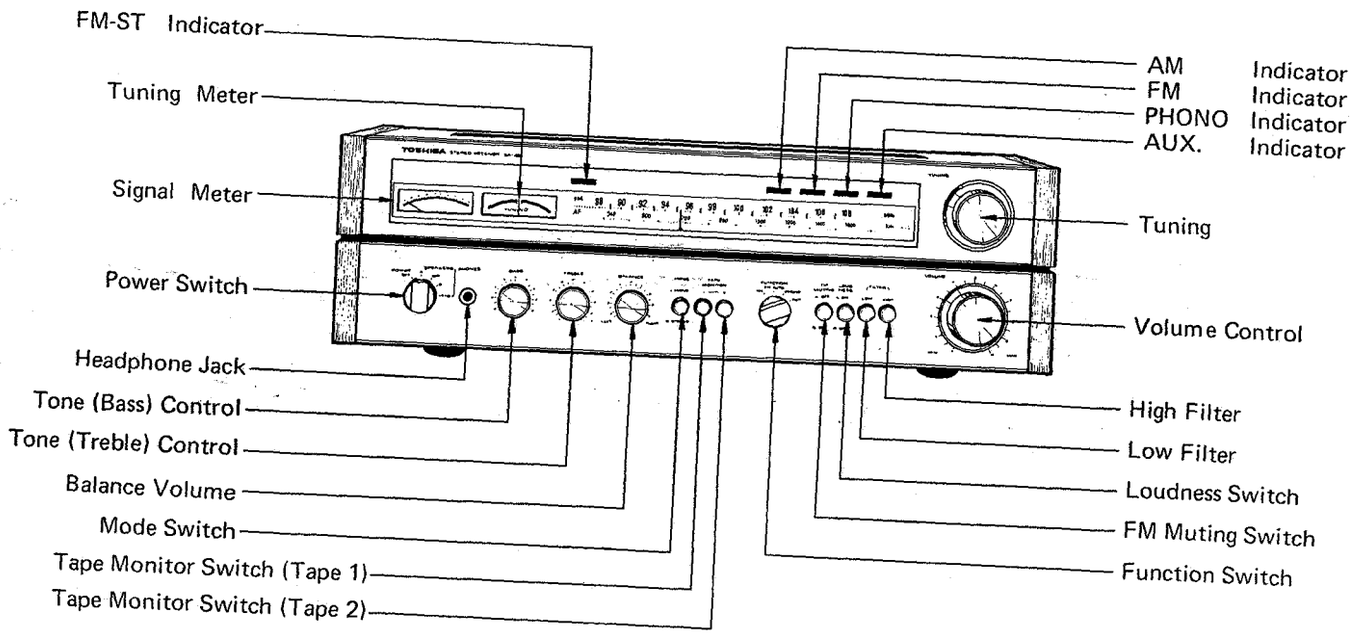
SCHEMATIC DIAGRAM 13

EXPLODED VIEW 14

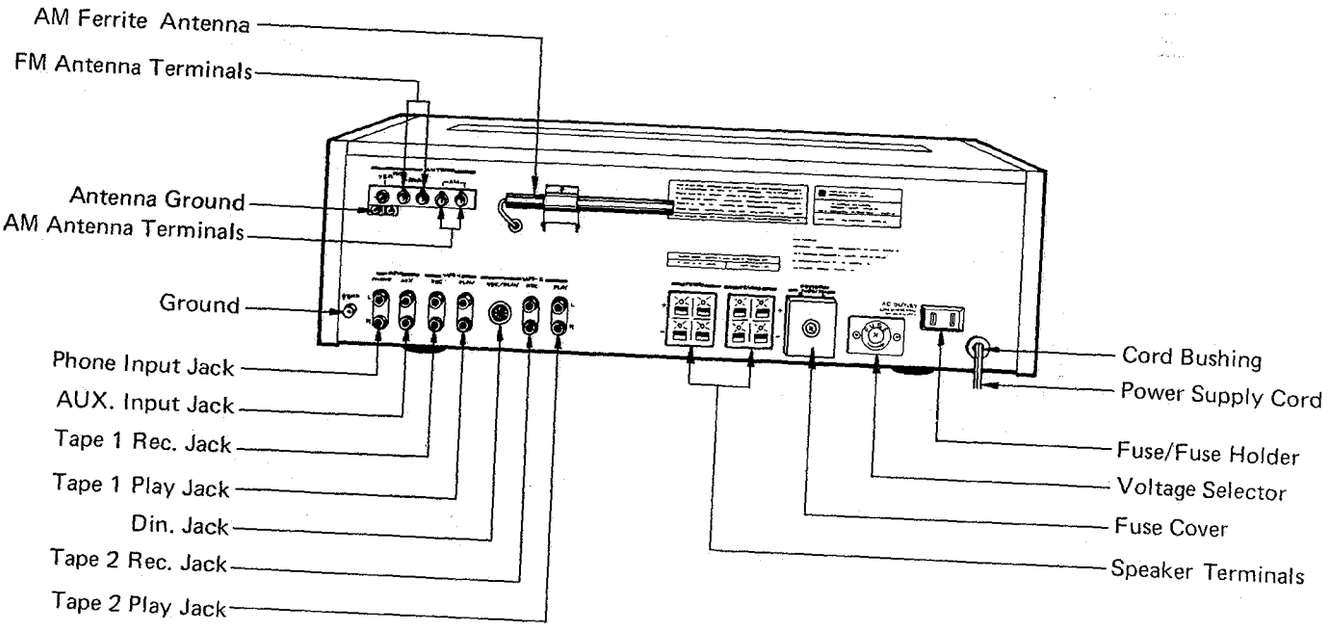
PARTS LIST 15
- TRANSISTORS, ICS & DIODES 15
- ELECTRICAL PARTS ..... 15 to 16
- CAPACITORS ..... 16 to 17
- RESISTORS ..... 17 to 18
- MECHANICAL PARTS 18
- CABINET PARTS ..... 18 to 19
- ACCESSORIES 19

OPERATING CONTROLS

FRONT VIEW



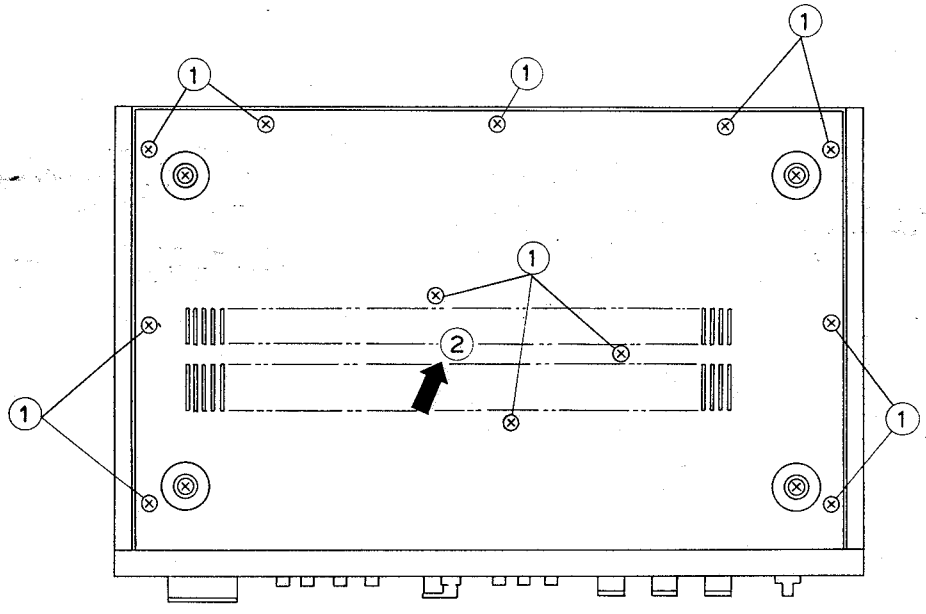
REAR VIEW



DISASSEMBLY INSTRUCTIONS

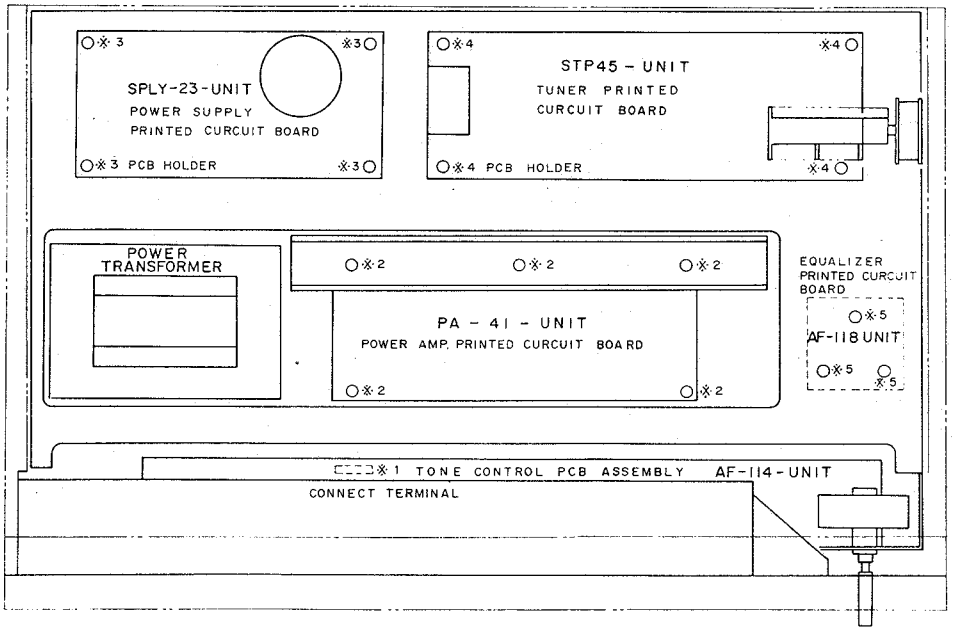
BOTTOM BOARD REMOVAL

1. Remove twelve screws 1.
2. Open the bottom board in the direction 2.



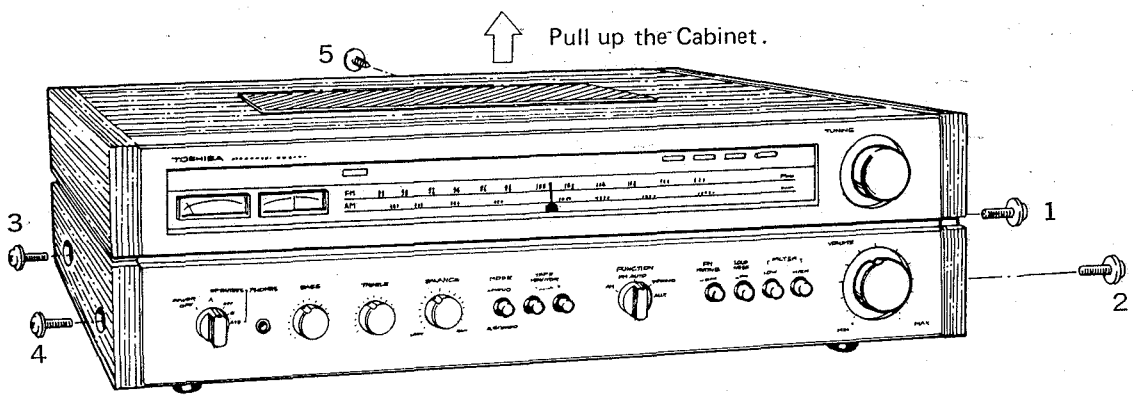
PRINTED CIRCUIT BOARD REMOVAL

1. Remove the connection terminal (marked*1) from control unit assembly.
   Remove the five screws, Nos. 1, 2, 3, 4 and 5 (marks*2).
   Separate the Power Amplifier printed circuit board assembly from the chassis.
2. Pull up the PCB (marked*3), and separate the Power supply printed circuit board from chassis.
3. Pull up the PCB (marked*4), and separate the Tuner printed circuit board from chassis.
4. Pull up the PCB (marked*5), and separate the Equalizer printed circuit board located under the chassis frame from chassis.



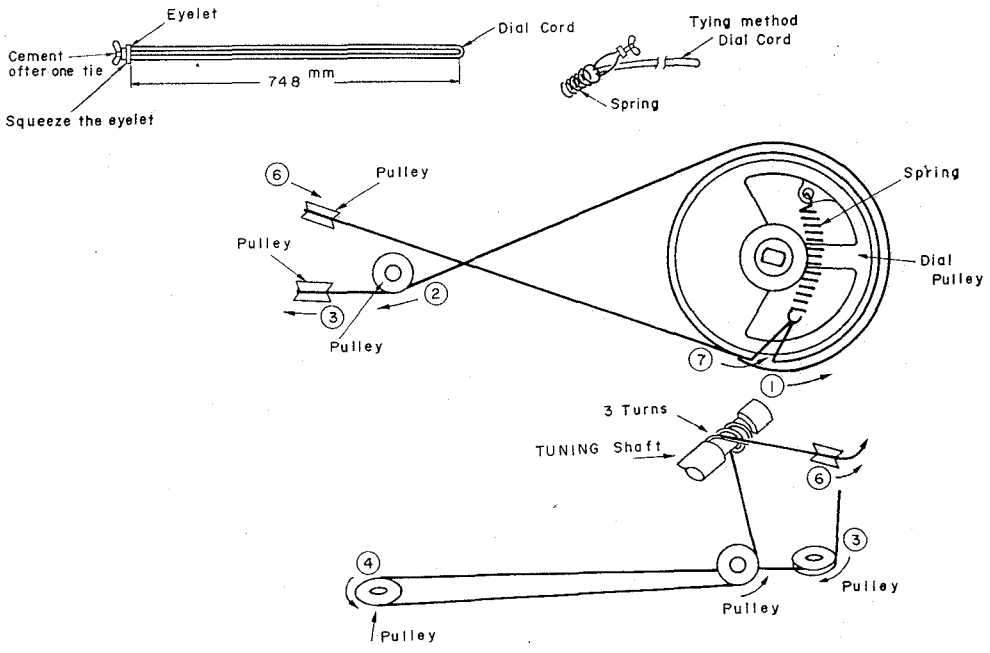
CABINET REMOVAL

Remove the five screws, Nos. 1, 2, 3, 4 and 5.
Separate the top cabinet from the chassis.



DIAL CORD RESTRINGING INSTRUCTIONS

1. Turn the tuning knob fully counterclockwise.
2. Tie the spring and the dial cord as shown in the illustration.
3. Insert the dial cord through the dial pulley eye and wind the cord in the numerical stringing sequence indicated in the diagram.



CIRCUIT ADJUSTMENTS

AM ADJUSTMENT

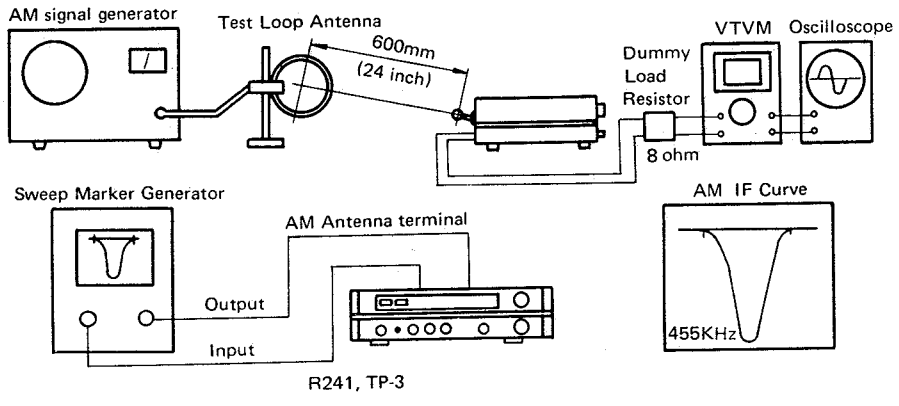
Test Equipments

- Signal generator with a frequency range of at least from 455 kHz to 23 MHz (AM).
- Sweep marker generator.
- Osilloscope with a wide range amplifier of apporoximately 100 kHz.
- VTVM.
- Dummy load resistor. (8 ohm).
- Test loop antenna.

1. Turn on the AM signal generator and the VTVM allowing a fifteen-minutes warm-up period.
2. Using the test loop across the output of the signal generator, inductively connect the signal generator to the receiver.
3. Connect the VTVM across the voice coil or an 8 ohm dummy load.
4. Set signal generator frequency as listed in ADJUSTMENT CHART and maintain a sufficient output level to provide an indication on VTVM.
5. Set volume control at mid-position.
6. Proceed as outlined in the AM ADJUSTMENT CHART.

AM ADJUSTMENT CHART

Band	Step	Signal Generator Frequency	Radio Dial Setting	Adjustment	Remarks
IF	1	455 kHz	Tuning Gang fully counter-clockwise Lowest Frequency	IT203 204 205	Adjust for maximum indication
AM	2	515 kHz	Tuning Gang fully counter-clockwise Lowest Frequency	OSC. coil L203	Adjust for maximum indication
	3	1650 kHz	Tuning Gang fully clockwise Highest Frequency	OSC. Trim TC201	Adjust for maximum indication
	4	Repeat steps 2 and 3 as required.			
	5	600 kHz	Tune to Signal	Ant. Coil L204	Adjust for maximum indication
	6	1400 kHz	Tune to Signal	Ant. Trim TC202	Adjust for maximum indication
	7	Repeat steps 5 and 6 as required.			



FM ADJUSTMENT

Test Equipments

- Signal generator with a frequency range of at least from 10MHZ to 220MHZ (FM)
- Sweep marker generator
- Oscilloscope with a wide range amplifier of approximately 100 KHZ
- VTVM
- FM dummy antenna (300 ohm)
- Dummy load resistor (8 ohm)

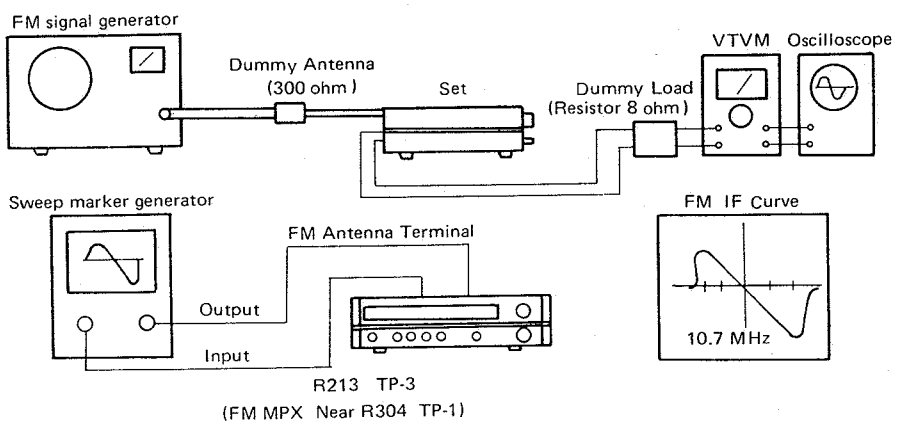
1. Turn on the FM signal generator and the VTVM allowing a fifteen minutes warm-up period.
2. Connect the VTVM across the voice coil or an 8 ohm dummy load.
3. Set signal generator frequency as listed in FM ADJUSTMENT CHART and maintain a sufficient output level to provide an indication on VTVM.
4. Set volume control at mid-position.
5. Proceed as outlined in FM ADJUSTMENT CHART.

FM ADJUSTMENT CHART

Band	Step	Signal Generator Frequency	Radio Dial Setting	Adjustment	Remarks
IF	1	10.7 MHz	Tuning Gang fully counter-clockwise (Lowest Frequency)	IT202 IT201 (secondary)	Adjust for maximum indication
OSC Freq. Re-sponse	2	87.5 MHz	Tuning Gang fully counter-clockwise (Lowest Frequency)	OSC Coil L103	Adjust for maximum indication
	3	109 MHz	Tuning Gang fully clockwise (Highest Frequency)	OSC Trim CT-3	Adjust for maximum indication
	Repeat steps 2 and 3 as required.				
RF Track-ing	4	88 MHz	Tune to signal	Ant. Coil L101/L102	Adjust for maximum indication
	5	108 MHz	Tune to signal	Ant. Trim CT-1/CT-2	Adjust for maximum indication
	Repeat steps 4 and 5 as required.				

CAUTION

WHEN REALIGNING THE FM RECEIVING FREQUENCY, THE LOWEST SIDE OF THE FREQUENCY RANGE MUST NOT BE BELOW 87.5 MHz IN ORDER TO COMPLY WITH FTZ REGULATIONS IN WEST GERMANY.



FM MPX ADJUSTMENT

1. Turn on the FM signal generator and the VTVM allowing fifteen minutes warm-up period.
2. Connect the signal generator across the FM antenna terminal.
3. Connect the VTVM across the voice coil or an 8 ohm dummy load.
4. Set signal generator frequency as listed in FM MPX ADJUSTMENT CHART and maintain a sufficient output level to provide indication on VTVM.
5. Set volume control knob to mid-position.
6. Proceed as outlined in FM MPX ADJUSTMENT CHART.

FM MPX ADJUSTMENT CHART

Band	Step	Signal Generator Frequency	Radio Frequency Setting	Adjusting	
Pilot Signal	1	19 kHz	Any position	VR302	Adjust for FM-STEREO indication lamp lighting
	2	98 MHz L channel	Any position	VR301	R channel output level to minimum indication

Note: Refer to page 7 for test equipment connections.

POWER TRANSISTOR IDLING CURRENT ADJUSTMENT

Turn the stereo receiver on, set function switch to AUX. position, and rotate volume control knob to minimum (counterclockwise).

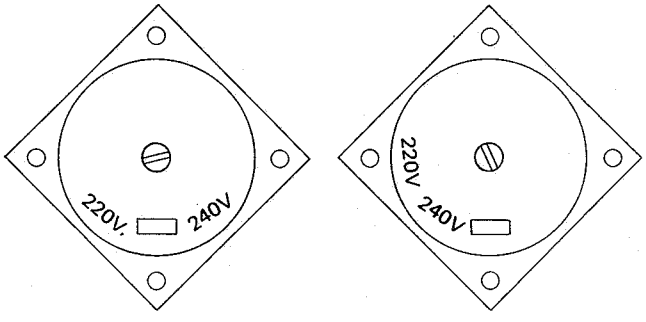
Connect the VTVM (Millivolt Meter, DC) to the both sides of resistor (R633 or 635) and adjust to 15±2mV by Semi-fixed resistor (VR601).

Connect the VTVM (Millivolt Meter, DC) to the both sides of resistor (R634 or 636) and adjust to 15±2mV by Semi-fixed resistor (VR602).

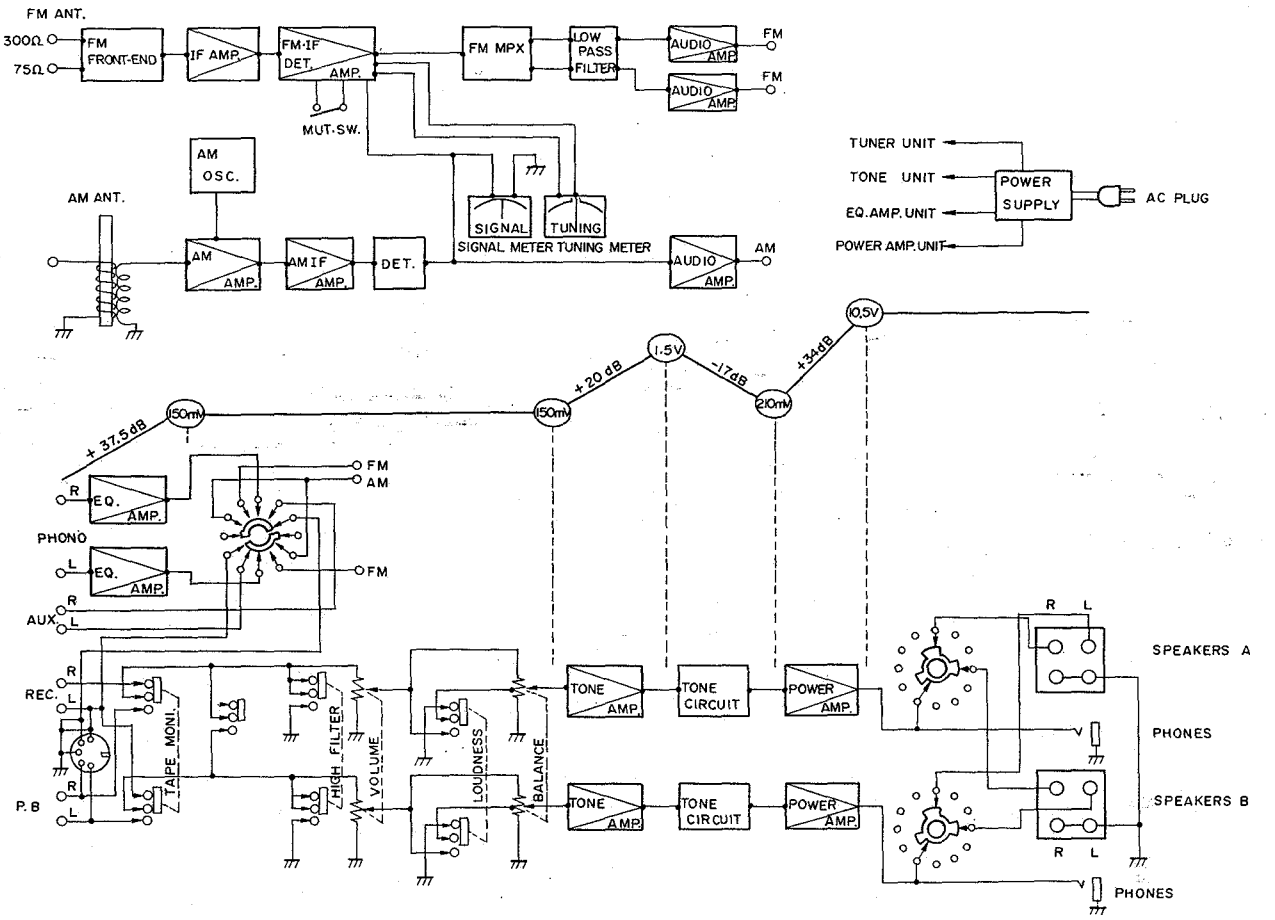
NOTICE FOR VOLTAGE SELECTOR SWITCH SETTING (For Europe Model)

Do not set Voltage selector switch between 220V and 240V, even though the actual power source is 230V or 250V. As clearly seen from the illustrations below, the switch should not be set to the position where there is no indication on the knob.

In case of resetting, make sure the switch is turned correctly, setting the voltage indicator to the window of voltage selector switch cover, in order to prevent the power transformer and the set itself from being damaged or burnt out.

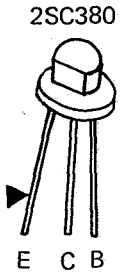


BLOCK DIAGRAM



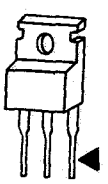
SEMICONDUCTOR BASE DIAGRAMS

2SC732
2SK19
2SC785
2SC734
2SC1000-BL
2SC941
2SC372
2SC380



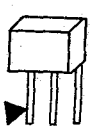
E C B

2SB595
2SD525
2SB234



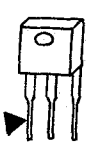
B C E

2SC509



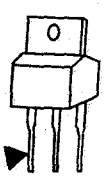
E B C

2SC1382
2SA682



E B C

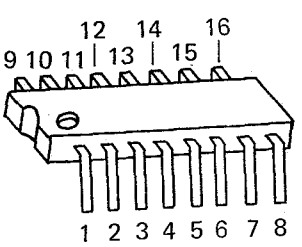
2SA818



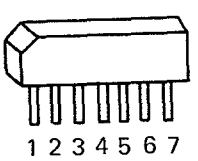
E B C

E: Emitter
C: Collector
B: Base

IC LA1230
IC LA3350

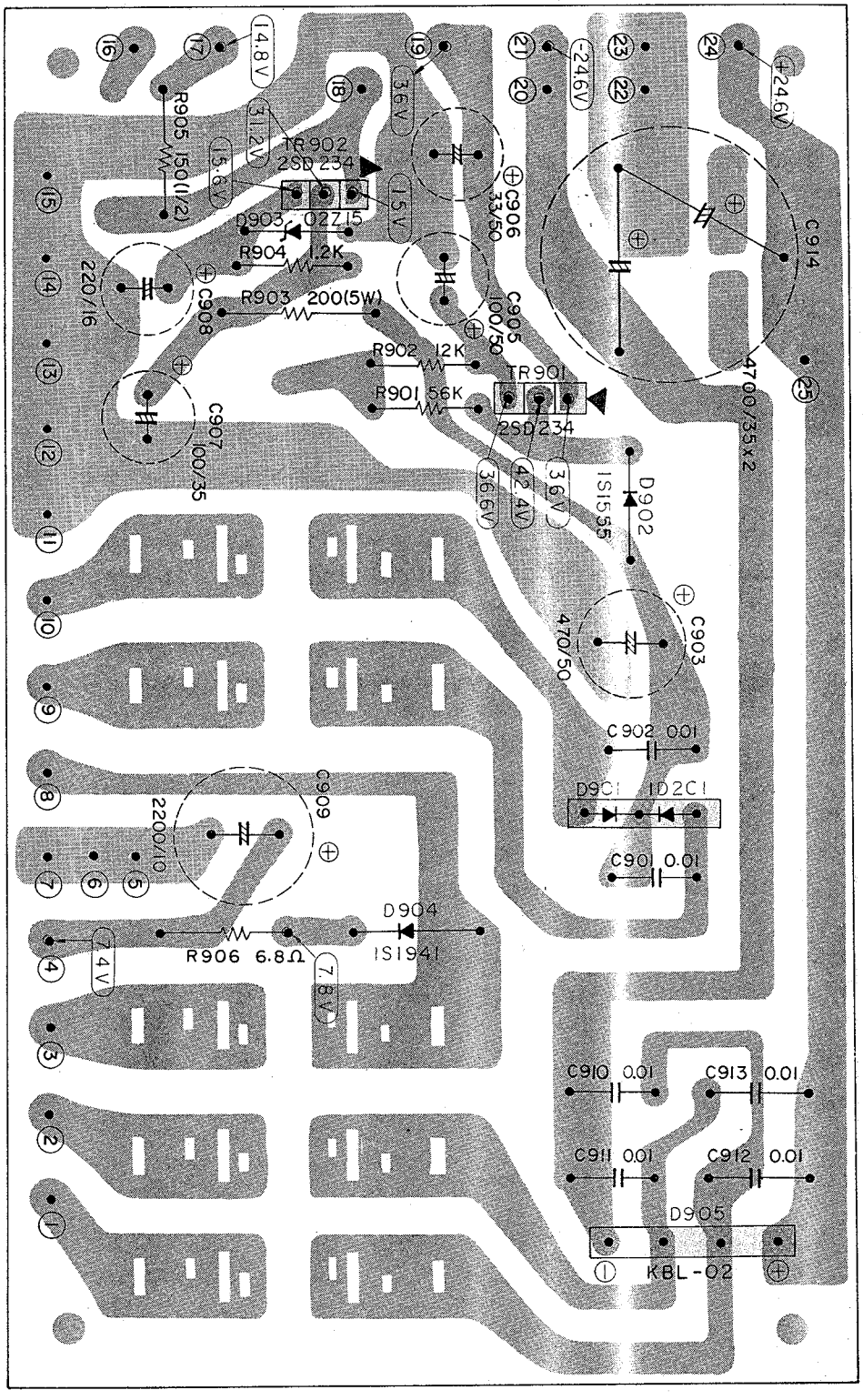


IC TA7122 AP

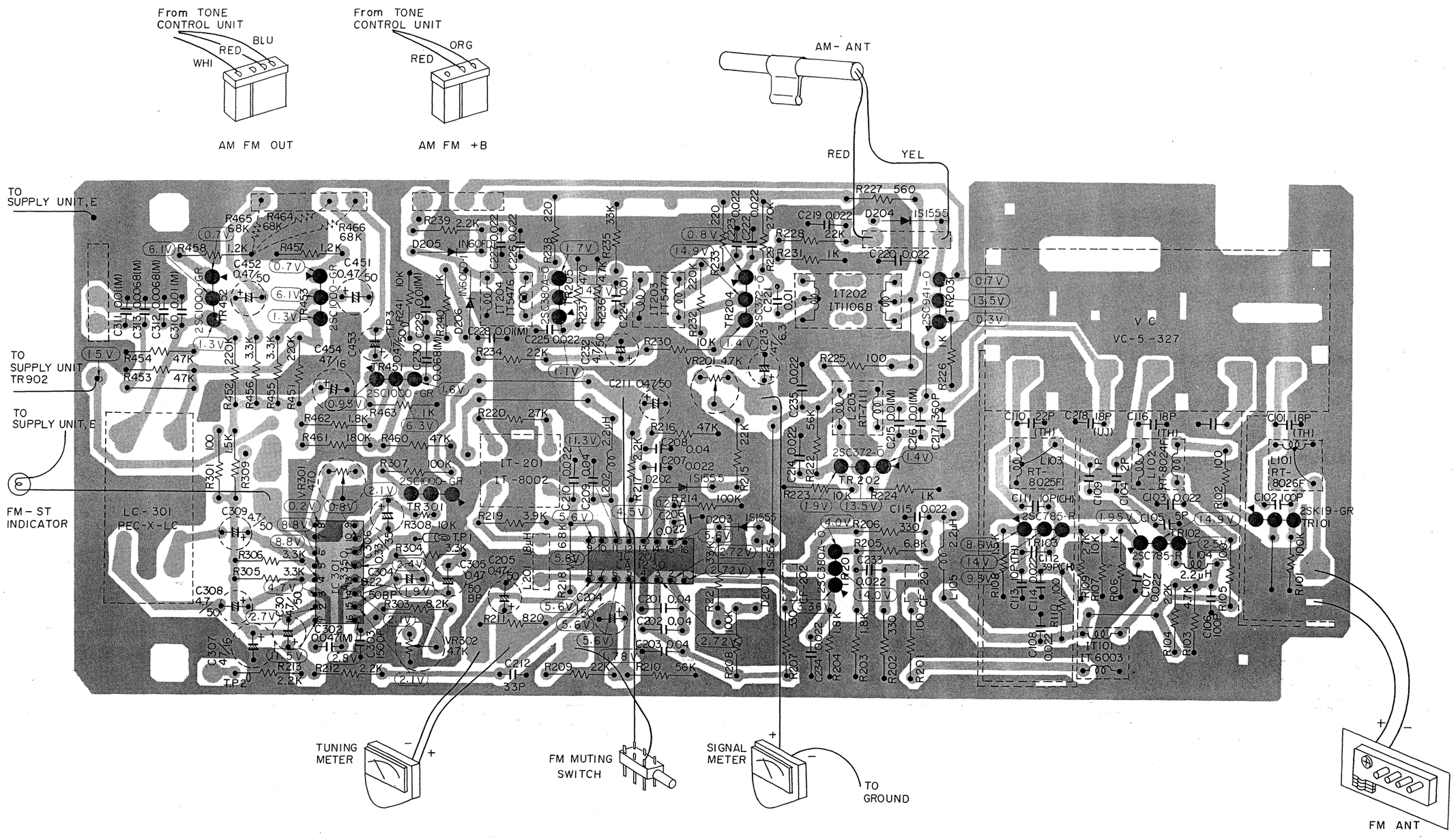


ELECTRICAL PARTS LOCATIONS

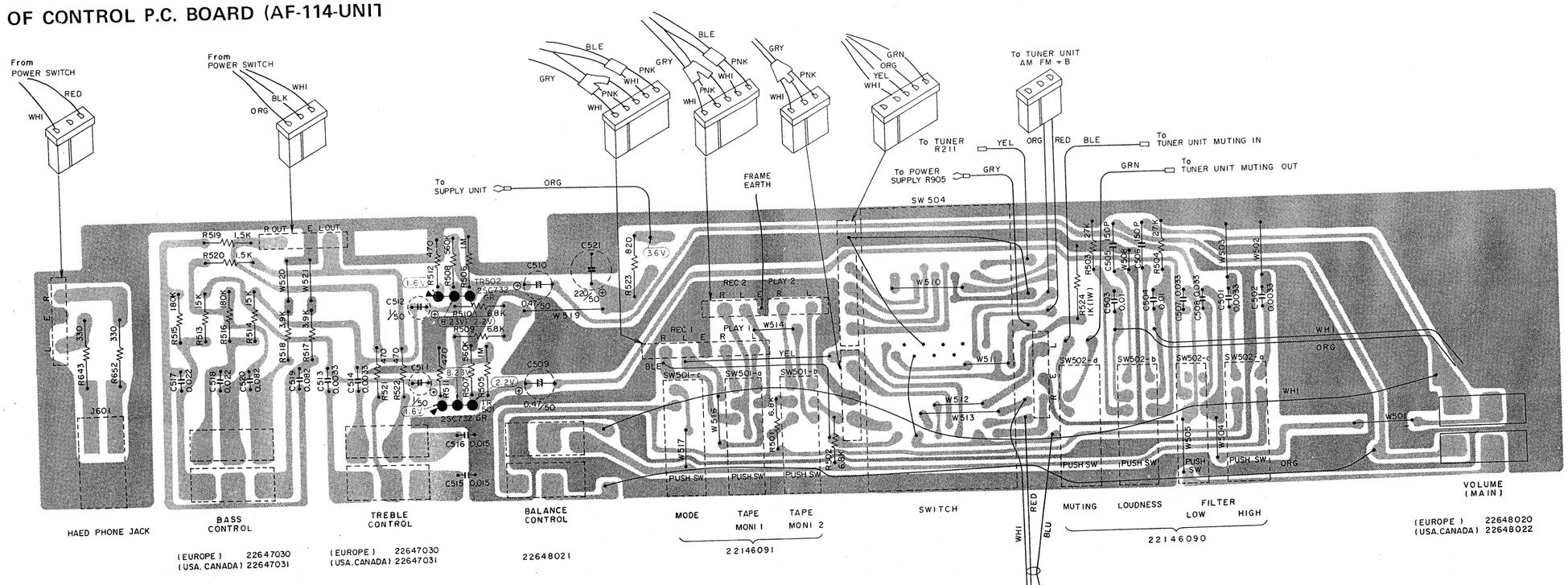
BOTTOM VIEW OF POWER SUPPLY P.C. BOARD (CCT-SPLY-23-UNIT)



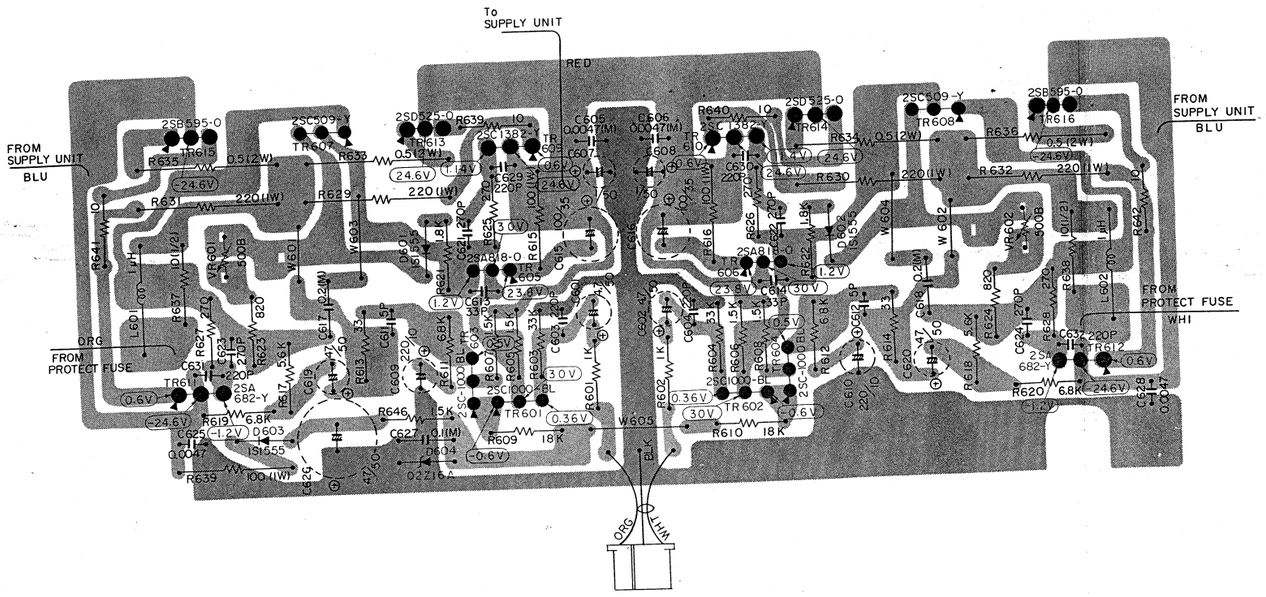
BOTTOM VIEW OF TUNER P.C. BOARD (STP-45-UNIT)



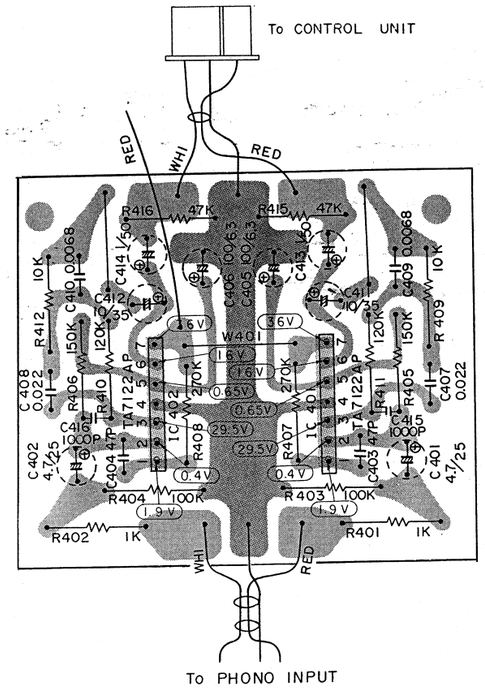
BOTTOM VIEW OF CONTROL P.C. BOARD (AF-114-UNIT



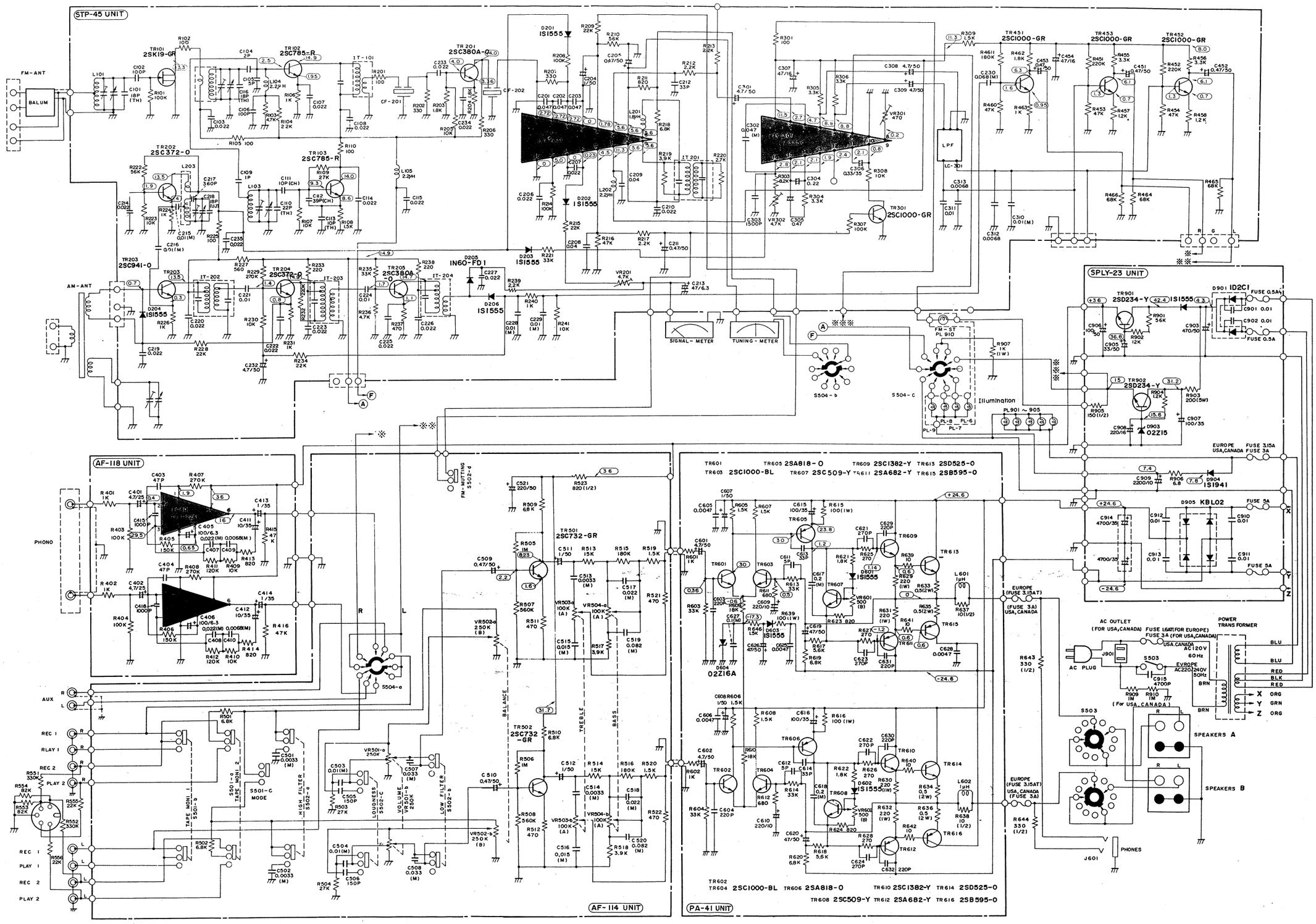
BOTTOM VIEW OF POWER AMP. P.C. BOARD (PA-41-UNIT)



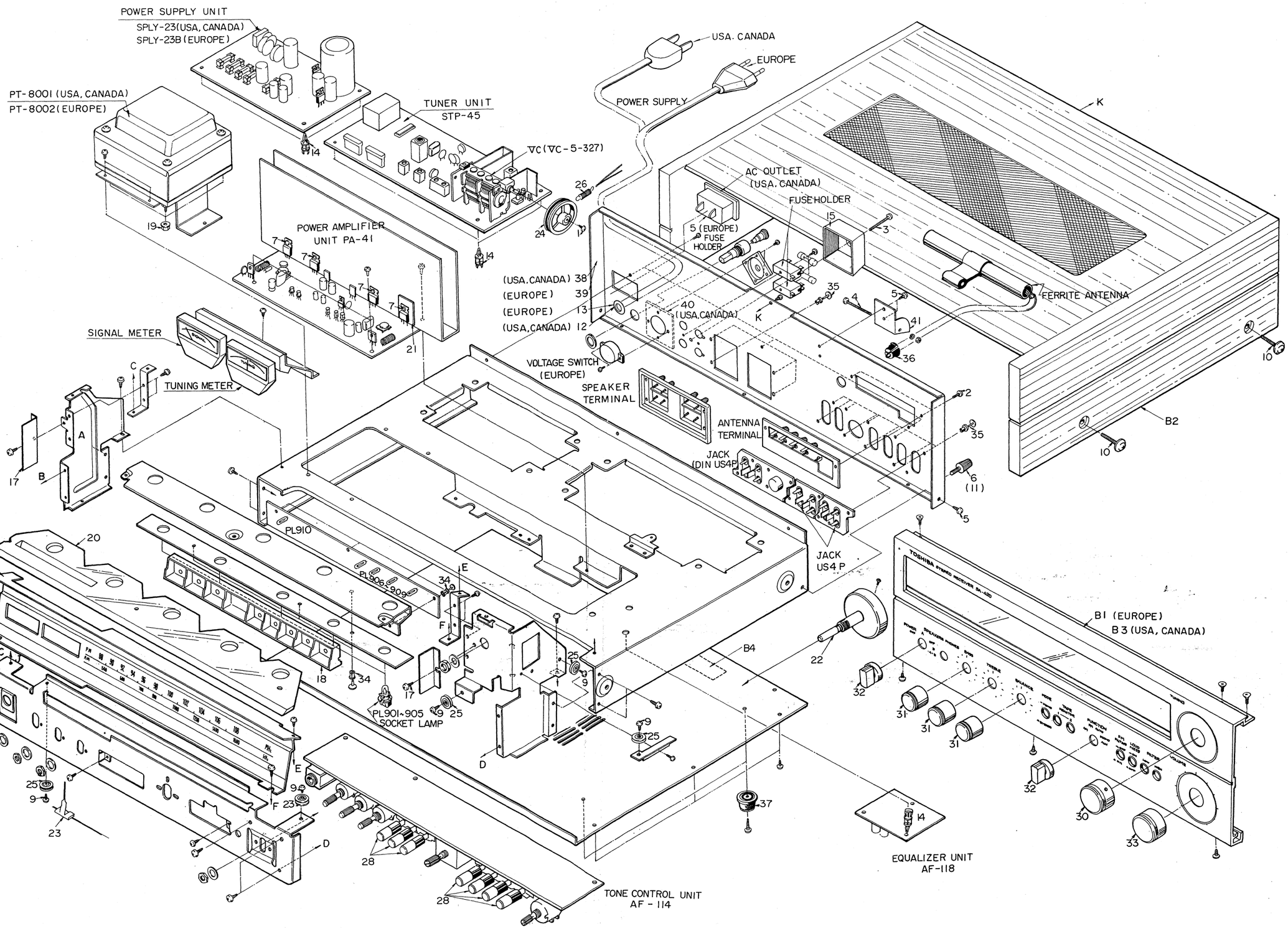
BOTTOM VIEW OF EQUALIZER P.C. BOARD (AF-118-UNIT)



SCHEMATIC DIAGRAM



EXPLODED VIEW



PARTS LIST

Symbol No.	Part No.	Description
		TRANSISTORS, IC'S AND DIODES
TR101		Transistor, 2SK19-GR
TR102		Transistor, 2SC785-R
TR103		Transistor, 2SC785-R
TR201		Transistor, 2SC380A-O
TR202		Transistor, 2SC941-O
TR203		Transistor, 2SC941-O
TR204		Transistor, 2SC372-O
TR205		Transistor, 2SC380A-O
TR301		Transistor, 2SC1000-GR
TR451		Transistor, 2SC1000-GR
TR452, 453		Transistor, 2SC1000-GR
TR501, 502		Transistor, 2SC732-GR
TR601, 602		Transistor, 2SC1000-BL
TR603, 604		Transistor, 2SC1000-BL
TR605, 606		Transistor, 2SA818-O
TR607, 608		Transistor, 2SC509-Y
TR609, 610		Transistor, 2SC1382-Y
TR611, 612		Transistor, 2SA682-Y
TR613, 614		Transistor, 2SD525-O
TR615, 616		Transistor, 2SB595-O
TR901		Transistor, 2SD234-Y
TR902		Transistor, 2SD234-Y
IC201	22114443	Integrated Circuit, LA1230
IC301	22114416	Integrated Circuit, LA3350
IC401, 402		Integrated Circuit, TA-7122AP
D201		Diode, 1S1555V-JA
D202		Diode, 1S1555V-JA
D203		Diode, 1S1555V-JA
D204		Diode, 1S1555V-JA
D205		Diode, 1N60FD-1
D206		Diode, 1N60FD-1
D601, 602		Diode, 1S1555V-JA
D603		Diode, 1S1555V-JA
D604		Diode, 02Z16A
D901		Diode, 1D2C1
D902		Diode, 1S1555
D903		Diode, 02Z15
D904		Diode, 1S1941
D905	2211293	Diode, KBL02
		ELECTRICAL PARTS
PT-8001	2221346	Transformer, Power (USA, Canada)
PT-8002	2221347	Transformer, Power (Europe)
L101	22292073	Coil, Trap (0.07μH) RT-8026F
L102	22294294	Coil, Trap (0.08μH) RT-8024F
L103	22295049	Coil, Trap (0.055μH) RT-8025F
L104	22291082	Coil, Trap (2.2μH) LH3003

Symbol No.	Part No.	Description
L105	22291082	Coil, Trap (2.2μH) LH3003
L201	22291083	Coil, Trap (18μH) LH3004
L202	22291082	Coil, Trap (2.2μH) LH3003
L203	22245206	Coil, Oscillator RT7111
L601, 602	22211193	Coil, Trap (1μH) LH4001
IT101	22265681	Coil, IFT IT6003
IT201	22267327	Coil, IFT IT8002
IT202	22264643	Coil, IFT IT1106B
IT203	22264626	Coil, IFT IT5477
IT204	22266308	Coil, IFT IT5476
	22290002	Coil, FM Antenna LH9050
LC301	22135017	Low Pass Filter
*CF201, 202	22153023	Ceramic Filter
PL901, 902 903, 904 905	22113377	Lamp, illumination
	22113383	Lamp, Indicator
	22104298	Tuning Meter
	22104306	Signal Meter
	22144143	Fuse, 3A (USA, Canada)
	22144293	Fuse, 1.6A (Europe)
	22144171	Fuse, 0.5A (Europe)
	22144277	Fuse, 0.5A (USA, Canada)
	22144283	Fuse, 3.15A (Europe)
	22144285	Fuse, 5A (Europe)
	22144286	Fuse, 5A (USA, Canada)
	22146087	Switch, Voltage Selector (Europe)
SW502	22146090	Push Switch
SW501	22146091	Push Switch
SW503	22146092	Rotary Switch, Power (USA, Canada)
SW504	22146093	Rotary Switch, Function
SW503	22146096	Rotary Switch, Power (Europe)
	22162339	Speaker Terminal (Europe)
	22162265	Speaker Terminal (USA, Canada)
	22162402	Antenna Terminal
J601	22163313	Headphone Jack
	22163443	Jack (US-4P)
	22163445	Jack (DIN. US-4P)
	22165062	Fuse Holder (USA, Canada)
	22165063	Fuse Holder (USA, Canada)
	22165074	Fuse Holder (Europe)
	22165075	Fuse Holder (Europe)
	22167453	AC Outlet (USA, Canada)
	22176221	Power Supply Cord (USA, Canada)
	22176540	Power Supply Cord (Europe)

Symbol No.	Part No.	Description
	22242556	Ferrite Antenna Ass'y
	22116092	Socket Lamp
CAPACITORS J=±5%,K=±10%,M=±20%,Z=-20+80%,P= 0+100%,D=±0.5pF		
C101 2236	22360261	Ceramic, 18pF, 50WV,
C102	22362101	Ceramic, 100pF, 50WV, K
C103	22341223	Ceramic, 0.022mfd, 50WV, P
C104	22361209	Ceramic, 2pF, 50WV, D
C105	22361509	Ceramic, 5pF, 50WV, D
C106	22362101	Ceramic, 100pF, 50WV, K
C107	22341223	Ceramic, 0.022mfd, 50WV, P
C108	22341223	Ceramic, 0.022mfd, 50WV, P
C109	22361109	Ceramic, 1pF, 50WV, D
C110	22360263	Ceramic, 22pF, 50WV,
C111	22360207	Ceramic, 10pF, 50WV,
C112	22360137	Ceramic, 39pF, 50WV,
C113	22360208	Ceramic, 10pF, 50WV,
C114	22341223	Ceramic, 0.022mfd, 50WV, P
C115	22341223	Ceramic, 0.022mfd, 50WV, P
C116	22360261	Ceramic, 18pF, 50WV,
C201	22341403	Ceramic, 0.04mfd, 50WV, P
C202	22341403	Ceramic, 0.04mfd, 50WV, P
C203	22341403	Ceramic, 0.04mfd, 50WV, P
C204	22448109	Electrolytic, 1mfd, 50WV, P
C205	22448478	Electrolytic, 0.47mfd, 50WV, P
C206	22341223	Ceramic, 0.022mfd, 50WV, P
C207	22341223	Ceramic, 0.022mfd, 50WV, P
C208	22341401	Ceramic, 0.04mfd, 50WV, P
C209	22341403	Ceramic, 0.04mfd, 50WV, P
C210	22341223	Ceramic, 0.022mfd, 50WV, P
C211	22448478	Electrolytic, 0.47mfd, 50WV, P
C212	22362330	Ceramic, 33pF, 50WV, K
C213	22442470	Electrolytic, 47mfd, 6.3WV, P
C214	22341223	Ceramic, 0.022mfd, 50WV, P
C215	22373103	Mylar, 0.01mfd, 50WV, M
C216	22373103	Mylar, 0.01mfd, 50WV, M
C217	22321016	Polystylene, 360pF, 50WV, J
C218	22360264	Ceramic, 18pF, 50WV, UJ
C219	22341223	Ceramic, 0.022mfd, 50WV, P
C220	22341223	Ceramic, 0.022mfd, 50WV, P
C221	22341103	Ceramic, 0.01mfd, 50WV, P
C222	22341223	Ceramic, 0.022mfd, 50WV, P
C223	22341223	Ceramic, 0.022mfd, 50WV, P
C224	22341103	Ceramic, 0.01mfd, 50WV, P
C225	22341223	Ceramic, 0.022mfd, 50WV, P
C226	22341223	Ceramic, 0.022mfd, 50WV, P
C227	22341223	Ceramic, 0.022mfd, 50WV, P
C228	22373103	Mylar, 0.01mfd, 50WV, M
C229	22373103	Mylar, 0.01mfd, 50WV, M
C230	22373683	Mylar, 0.068mfd, 50WV, M
C232	22448479	Electrolytic, 4.7mfd, 50WV, P

Symbol No.	Part No.	DEscription
C233	22341223	Ceramic, 0.022mfd, 50WV, P
C234	22341223	Ceramic, 0.022mfd, 50WV, P
C235	22341223	Ceramic, 0.022mfd, 50WV, P
C301	22448479	Electrolytic, 4.7mfd, 50WV, P
C302	22373473	Mylar, 0.047mfd, 50WV, M
C303	22321059	Polystylene, 1500pF, 50WV, K
C304	22403053	Electrolytic, 0.22mfd, 50WV, P
C305	22403054	Electrolytic, 0.47mfd, 50WV, P
C306	22401022	Tantalum, 0.33mfd, 35WV, P
C307	22445470	Electrolytic, 47mfd, 16WV, P
C308	22448479	Electrolytic, 4.7mfd, 50WV, P
C309	22448479	Electrolytic, 4.7mfd, 50WV, P
C310	22373103	Mylar, 0.01mfd, 50WV, M
C311	22373103	Mylar, 0.01mfd, 50WV, M
C312	22372682	Mylar, 0.0068mfd, 50WV, K
C313	22372682	Mylar, 0.0068mfd, 50WV, K
C401, 402	22446479	Electrolytic, 4.7mfd, 25WV, P
C403, 404	22362470	Ceramic, 47pF, 50WV, K
C405, 406	22442101	Electrolytic, 100mfd, 6.3WV, P
C407, 408	22372223	Mylar, 0.022mfd, 50WV, K
C409, 410	22372682	Mylar, 0.0068mfd, 50WV, K
C411, 412	22447101	Electrolytic, 10mfd, 35WV, P
C413, 414	22448109	Electrolytic, 1mfd, 50WV, P
C451, 452	22448478	Electrolytic, 0.47mfd, 50WV, P
C453	22448478	Electrolytic, 0.47mfd, 50WV, P
C454	22445470	Electrolytic, 47mfd, 16WV, P
C501, 502	22372332	Mylar, 0.0033mfd, 50WV, K
C503, 504	22372103	Mylar, 0.01mfd, 50WV, K
C505, 506	22362151	Ceramic, 150pF, 50WV, K
C507, 508	22372333	Mylar, 0.033mfd, 50WV, K
C509, 510	22448478	Electrolytic, 0.47mfd, 50WV, P
C511, 512	22448109	Electrolytic, 1mfd, 50WV, P
C513, 514	22372332	Mylar, 0.0033mfd, 50WV, K
C515, 516	22372153	Mylar, 0.015mfd, 50WV, K
C517, 518	22372223	Mylar, 0.022mfd, 50WV, K
C519, 520	22372823	Mylar, 0.082mfd, 50WV, K
C521	22448221	Electrolytic, 220mfd, 50WV, P
C601, 602	22448479	Electrolytic, 4.7mfd, 50WV, P
C603, 604	22362221	Ceramic, 220pF, 50WV, K
C605, 606	22372472	Mylar, 0.0047mfd, 50WV, K
C607, 608	22448109	Electrolytic, 1mfd, 50WV, P
C609, 610	22443221	Electrolytic, 220mfd, 10WV, P
C611, 612	22361509	Ceramic, 5pF, 50WV, D
C613, 614	22362330	Ceramic, 33pF, 50WV, K
C615, 616	22447101	Electrolytic, 100mfd, 35WV, P
C617, 618	22372224	Mylar, 0.2mfd, 50WV, K
C619, 620	22448470	Electrolytic, 47mfd, 50WV, P
C621, 622	22362271	Ceramic, 270pF, 50WV, K
C623, 624	22362271	Ceramic, 270pF, 50WV, K
C625	22372472	Mylar, 0.0047mfd, 50WV, K
C626	22448470	Electrolytic, 47mfd, 50WV, P
C627	22372104	Mylar, 0.1mfd, 50WV, K

Symbo No.	Part No.	Description
C628	22372472	Mylar, 0.047mfd, 50WV, K
C629, 630	22362221	Ceramic 220pfd, 50WV, K
C631, 632	22362221	Ceramic, 220pfd, 50WV, K
C901	22360252	Ceramic, 0.01mfd, 150WV, Z
C902	22360252	Ceramic, 0.01mfd, 150WV, Z
C903	22448471	Electrolytic, 470mfd, 50WV, P
C905	22448101	Electrolytic, 100mfd, 50WV, P
C906	22448101	Electrolytic, 100mfd, 50WV, P
C907	22447101	Electrolytic, 100mfd, 35WV, P
C908	22445221	Electrolytic, 220mfd, 16WV, P
C909	22443222	Electrolytic, 2200mfd, 10WV, P
C910, 911 912, 913	22360252	Ceramic, 0.01mfd, 150WV, Z
C914	22430051	Electrolytic, 4700+4700mfd, 35WV, P
C915	22310019	Polypropylene, 4700pF, P
VC	22307102	Variable Capacitor (VC-5-327)
RESISTORS **All resistors are 1/4W, 5%, carbon film resistor unless otherwise noted.**		
R101	22545104	100K ohm
R102	22545101	100 ohm
R103	22545472	4.7K ohm
R104	22545223	22K ohm
R105	22545101	100 ohm
R106	22545102	1K ohm
R107	22545103	10K ohm
R108	22545152	1.5K ohm
R109	22545273	27K ohm
R110	22545101	100 ohm
R201	22545101	100 ohm
R202	22545331	330 ohm
R203	22545182	1.8K ohm
R204	22545182	1.8K ohm
R205	22545103	10K ohm
R206	22545331	330 ohm
R207	22545331	330 ohm
R208	22545104	100K ohm
R209	22545223	22K ohm
R210	22545563	56K ohm
R211	22545821	820 ohm
R212	22545222	2.2K ohm
R213	22545222	2.2K ohm
R214	22545104	100K ohm
R215	22545223	22K ohm
R216	22545473	47K ohm
R217	22545222	2.2K ohm
R218	22545682	6.8K ohm
R219	22545392	3.9K ohm
R220	22545272	2.7K ohm

Symbol No.	Part No.	Description
R221	22545333	33K ohm
R222	22545563	56K ohm
R223	22545103	10K ohm
R224	22545102	1K ohm
R225	22545101	100 ohm
R226	22545102	1K ohm
R227	22545561	560 ohm
R228	22545223	22K ohm
R229	22545274	270K ohm
R230	22545103	10K ohm
R231	11545102	1K ohm
R232	22545224	220K ohm
R233	22545221	220 ohm
R234	22545223	22K ohm
R235	22545333	33K ohm
R236	22545472	4.7K ohm
R237	22545471	470 ohm
R238	22545221	220 ohm
R239	22545222	2.2K ohm
R240	22545102	1K ohm
R241	22545103	10K ohm
R301	22545101	100 ohm
R302		
R303	22545822	8.2K ohm
R304	22545332	3.3K ohm
R305	22545332	3.3K ohm
R306	22545332	3.3K ohm
R307	22545104	100K ohm
R308	22545103	10K ohm
R309	22545152	1.5K ohm
R401, 402	22545102	1K ohm
R403, 404	22545104	100K ohm
R405, 406	22545154	150K ohm
R407, 408	22545274	270K ohm
R409, 410	22545103	10K ohm
R411, 412	22545124	120K ohm
R413, 414	22545821	820 ohm
R415, 416	22545473	47K ohm
R451, 452	22545224	220K ohm
R453, 454	22545473	47K ohm
R455, 456	22545332	3.3K ohm
R457, 458	22545122	1.2K ohm
R460	22545473	47K ohm
R461	22545184	180K ohm
R462	22545182	1.8K ohm
R463	22545103	1K ohm
R464	22545683	68K ohm
R465	22545683	68K ohm
R466	22545683	68K ohm
R501, 502	22545682	6.8K ohm
R503, 504	22545273	27K ohm
R505, 506	22545105	1Mohm

Symbol No.	Part No.	Description
R507, 508	22545564	560K ohm
R509, 510	22545682	6.8K ohm
R511, 512	22545471	470 ohm
R513, 514	22545153	15K ohm
R515, 516	22545184	180K ohm
R517, 518	22545392	3.9K ohm
R519, 520	22545152	1.5K ohm
R521, 522	22545471	470 ohm
R523	22563821	820 ohm (1/2W) Composition
R524	22570080	1K ohm (1W) Oxide metalized
R551, 552	22545334	330K ohm
R553, 554	22545823	82K ohm
R555, 556	22545223	22K ohm
R601, 602	22545102	1K ohm
R603, 604	22545333	33K ohm
R605, 606	22545152	1.5K ohm
R607, 608	22545152	1.5K ohm
R609, 610	22545183	18K ohm
R611, 612	22545681	680 ohm
R613, 614	22545333	33K ohm
R615, 616	22570058	100 ohm (1W) Oxide Metalized
R617, 618	22545562	5.6K ohm
R619, 620	22545682	6.8K ohm
R621, 622	22545182	1.8K ohm
R623, 624	22545821	820 ohm
R625, 626	22545271	270 ohm
R627, 628	22545271	270 ohm
R629, 630	22570049	220 ohm (1W) Oxide Metalized
R631, 632	22570049	220 ohm (1W) Oxide Metalized
R633, 634	22500039	0.5 ohm (2W) Oxide Metalized
R635, 636	22500039	0.5 ohm (2W) Oxide Metalized
R637, 638	22563100	10 ohm (1/2W) Composition
R639, 640	22545100	10 ohm
R641, 642	22545100	10 ohm
R643, 652	22563331	330 ohm (1/2W) Composition
R639	22570058	100 ohm (1W) Oxide Metalized
R646	22545152	1.5K ohm
R901	22545563	56K ohm
R902	22545123	12K ohm
R903	22570049	200 ohm (2W) Oxide Metalized
R904	22545122	1.2K ohm
R905	22563151	150 ohm (1/2W) Composition
R906	22545689	6.8 ohm
R907	22570080	1K ohm (1W) Oxide Metalized
R909	22563105	1Mohm K
R910	22563105	1Mohm K
VR201	22658318	4.7K ohm, Semi-fixed
VR301	22658260	470 ohm, Semi-fixed
VR302	22658318	4.7K ohm, Semi-fixed
VR501	22648020	250K ohm, Variable (Europe)
VR501	22648022	250K ohm, Variable (USA, Canada)
VR502	22648021	250K ohm, Variable (MN type)
VR503, 504	22647030	100K ohm, Variable (Europe)
VR503, 504	22647031	100K ohm, Variable (USA, Canada)
VR601, 602	22658378	500 ohm, Semi-fixed
MECHANICAL PARTS		
1	70402608	Screw(BID), M2.6 x 8mm
2	70403006	Screw(BID), M3 x 6mm, Black
3	70403025	Screw(BID), M3 x 25mm, Black
4	70403030	Screw(PAN), M3 x 30mm
5	71233006	Screw(BID, Tapping) M3 x 6mm, Black
6	22162338	Earth Terminal
7	20794089	Screw(PAN), M3 x 8mm, Plastic
8	20794109	Screw(BRA, Tapping) M3 x 16mm, Black
9	20794119	Screw(BRA, Tapping) M3 x 10mm
10	20794141	Screw(PAN), M4 x 20mm, Black
11	20794122	Screw(Special head) M3 x 13mm
12	20021170	Cord Bushing (USA, Canada)
13	20021201	Insulator (Europe)
14	20022049	PCB Holder
15	20031040	Cover, Fuse
16	20031041	Cover, Voltage Switch (Europe)
17	20031042	Cover, Dial Scale
18	20031044	Cover, Lamp
19	20796032	Nut (M4 W/Washer)
20	20033074	Reflector
21	22118183	Insulator
22	20041051	Tuning Shaft Ass'y
23	20041052	Pointer Ass'y
24	20042057	Drum
25	20042058	Pulley
26	20866009	Tention Spring
27	20071046	Dial Scale Ass'y
28	22824175	Knob Ass'y
29	20871207	Knob
30	20871241	Knob, Tuning
31	22826124	Knob, Tone
32	22826125	Knob, Selector
33	22826123	Knob, Volume
34	22705020	Plastic Rivet (3 x 4.5)
35	22705022	Plastic Rivet (3 x 5.5)
36	25845524	Nylon Bushing F-4
37	20842034	Leg Ass'y
38	20015121	Jack Plate (USA, Canada)
39	20015102	Jack Plate (Europe)
40	20022083	Bracket, Fuse (USA, Canada)
41	20022036	Bracket, Antenna
42	25858299	Cushion
CABINET PARTS		
B1	20017094	Panel Ass'y (Europe)

Symbol No.	Part No.	Description
B2	20815138	Cabinet Ass'y
B3	20017108	Panel-Ass'y (USA, Canada)
B4	22950592	Caution Label
	ACCESSORIES	
	20951254	Owner's Manual (Europe)
	20951290	Owner's Manual (USA)
	22124223	FM Antenna
	22956405	Tag, FTC (Ply Wood)(USA)